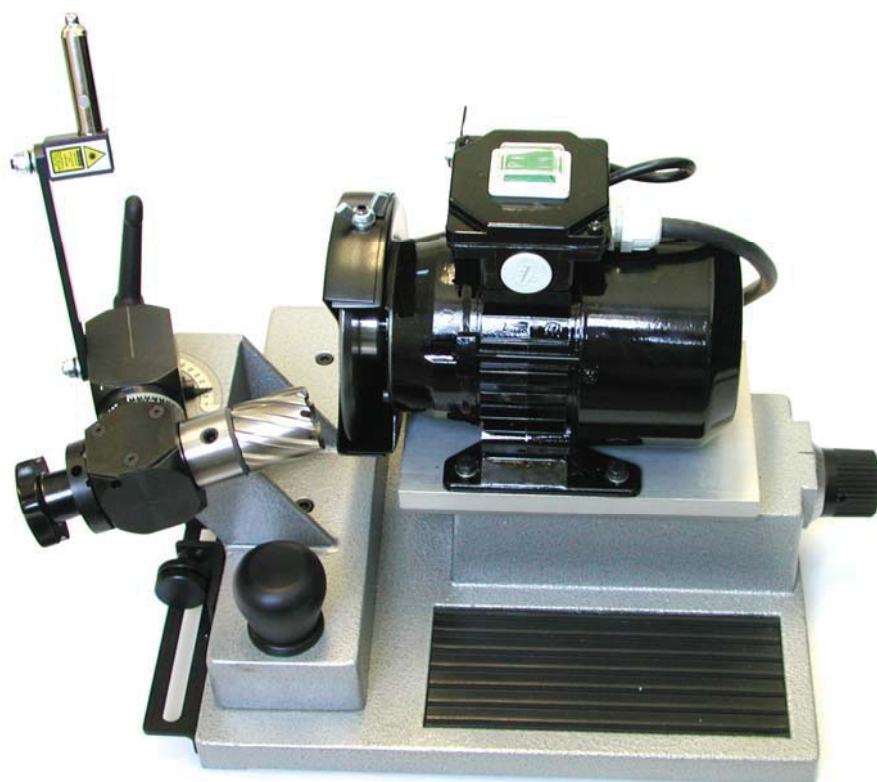


HOLEMAKER

# **ANNULAR CUTTER SHARPENING MACHINE HMCS100-1**



## **USER MANUAL**

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## 2. Description

### 2.1. Directed use

Grinding machine HMCS100-1 is designed for HSS and TCT annular cutter resharpener. Machine is not recommended to any other applications except above mentioned.

Manufacturer recommends careful reading of the user manual, especially points regarding basic safety advise.

### 2.2. Description of work

Grinding machine HMCS100-1 enables easy annular cutter resharpener. Due to solid & precise construction & small dimensions the HMCS100-1 can be easily transported to job sites. The HMCS100-1 was designed as a user friendly machine in order to learn in a short time how to sharpen the annular cutter effectively and precisely.

### 2.3. Technical data

Dimensions LxWxH. [mm]		465 x 399 x 355
Weight net [kg]		15.5
Supply [V]		110V AC
Motor [V / kW / rpm.]		110 / 0.18 / 2820
Movement length	Motor guide [mm]	70
	Guiding slide [mm]	162
Noise level dB(A)		<70
Grinding disc inert time [s]		10
Grinding disc		Electroplated, diamond grinding disc ø 125 mm
Cutter's clamping [mm]		19 (Weldon shank)
Insulation class		I
Diameter / core drill's length		ø50 mm / 50 mm

## 2.4. Equipment

Annular Cutter resharpener machine HMCS100-1 ! is delivered to the customer in carton packing, ready to use. Standard equipment:

- set of dividing discs
- hexagonal keys  $s=2,5$  and  $s=4$ ,
- Diamond Wheel
- User manual



### 3. General Safety Advise

#### 3.1. User's Duty

To assist with safe use of the machine make sure that:

- Machine is used as directed
- Machine is free of defects and damage
- Safety guards are in place
- Personal protection equipment is always used
- User manual is always close to the machine
- None of the safety and warning labels are removed from the machine.

#### 3.2. Basic safety advise

User Manual shall be always kept close to the machine in readable condition and available for any person operating the machine.

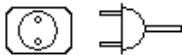
Symbols placed on the machine point out that there is a danger to the operator. Labels placed on the machine have to be kept in good readable condition. Damaged or not readable labels should be replaced immediately.



Always wear safety glasses during machine work.  
Grinding dust can be dangerous for your eyes.



Remove of the grinding disc guard is only permissible for grinding disc replace. During machine's operation, guard must always be mounted.



Before grinding disc replace or machine remove always disconnect it from electric supply.



**WARNING!!! LASER.** Machine HMCS100-1 is equipped with laser.  
In order to avoid eye injury laser **CAN NOT** be directed into the human eye.

### 3.3. Demands for operator

Only people familiar with this user manual, can be allowed to work with HMCS100-1 annular cutter grinding machine. A user who does not know this user manual's contents before starting the machine, maintenance or service, may cause a dangerous situation for user's and neighboring persons safety.

Do not operate the machine under the influence of alcohol, or medicines

### 3.4. Special risks

Before machine start:

- Check if there is any visible damage.  
Defective parts must be replaced.
- Do not start machine if any damage or lack of equipment is observed
- Do not start machine in vicinity of flammable materials or vapors.
- Check power supply cord.
  - Damaged power supply cords must be replaced by a licenced electrician
  - Never clean up electric equipment with water
- Do not dismantle safety protection elements

#### Machine modification

Do Not Modify Machine.

Use Only Genuine Parts.

## 4. Installation

### 4.1. HMCS100-1 Environment

Use HMCS100-2 machine only in dry rooms

Environment temperature +5 - +50 °C

Humidity max. 90%

Place machine on solid bench

Pay attention to safe machine placing

Machine's work place has to ensure a vibration free operation



To avoid machine damage and serious injury when starting the machine, the following steps are necessary:

ensure all parts and tools that are not part of the machine ( keys, screws) are removed from the machine vicinity.

Read also the chapter "General Safety Advice"

**Always wear safety glasses.**

### 4.2. Check before first installation

- Check machine for any visible damage
- Check all parts are secure.
- Ensure supply power corresponds to required data placed in this manual and on the machine's name plate.
- Check if slideway moves without excessive frictional resistance.
- In the case of the power supply plug not suited to socket, a qualified electrician is necessary, in order to fit the plug and the socket.



#### **Warning!**

Never start the machine if some equipment is missing, or machine is not carefully assembled. Not respecting this prohibition may cause an accident and heavy injury.

## 5. Transport and storage

### Storing conditions

Machine is delivered in original factory packing . We recommend for longterm storing to keep machine in dry surroundings in factory packing, in temperature from -20° C to 50° C.

### Transport conditions

When transporting machine make sure slide mechanism is in locked position and machine is well packed in original factory packing

Before Moving Machine :

- Turn off machine with button on position "0"
- Disconnect the power cord from the socket
- Carry the machine holding the machine's base with both hands

### **Warning!**

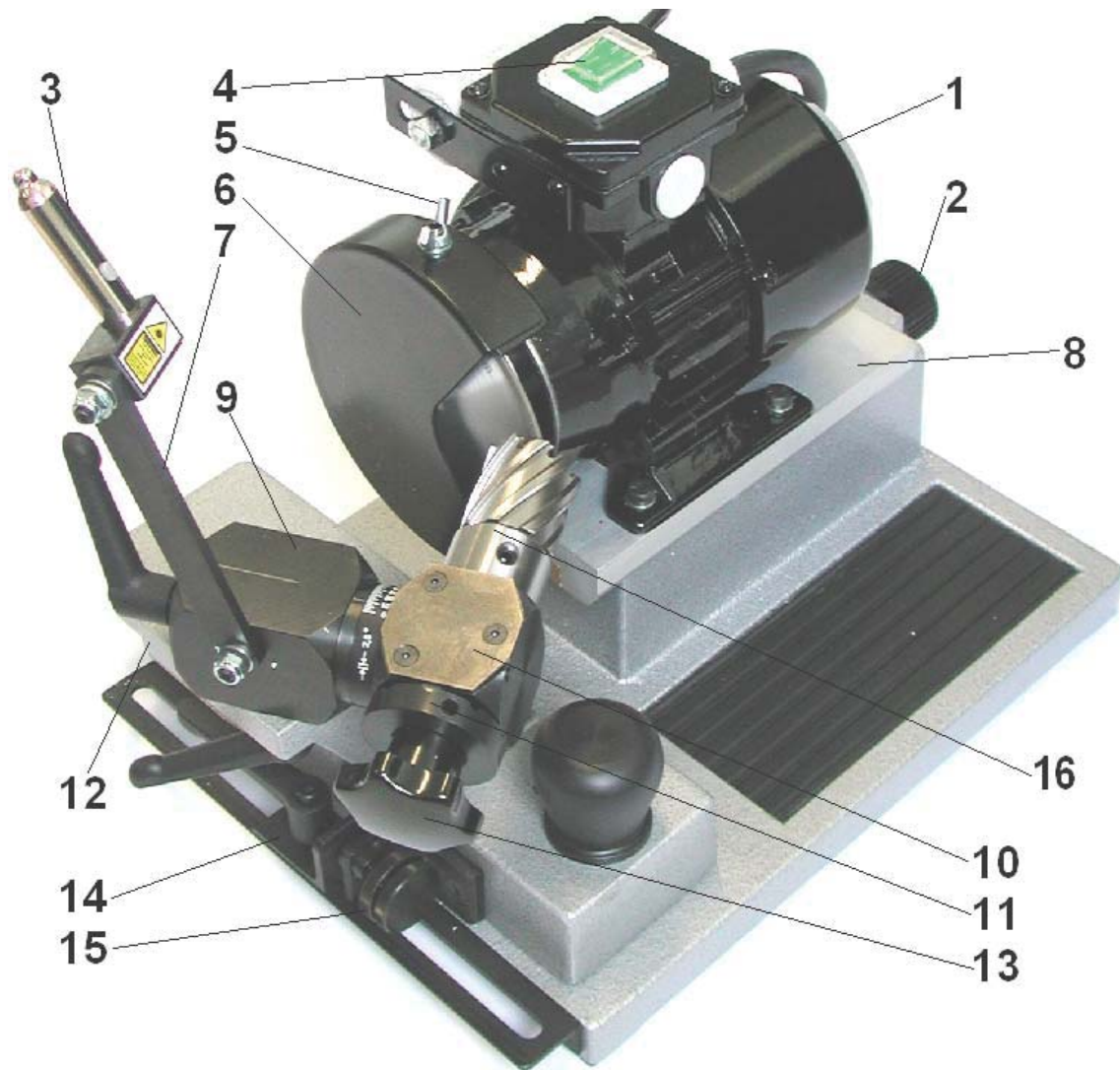
In any case never:

- Carry machine by power cord, grinding disc, disc guard, adjusting elements or laser indicator body.



## 6. Operation

### 6.1. Components description



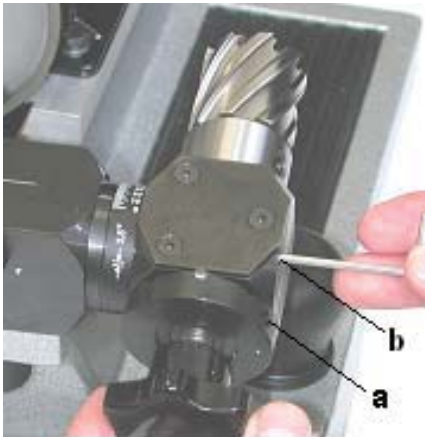
- 1. Motor
- 2. Motor feed screw
- 3. Laser
- 4. Motor switch
- 5. Grinding disc guard fixing
- 6. Grinding disc guard
- 7. Laser arm
- 8. Motor slideway

- 9. Wheelhead support
- 10. Annular cutter holder support
- 11. Dividing disc
- 12. Support slideway
- 13. Star wheel with screw
- 14. Bumper handle
- 15. Micrometric screw
- 16. Weldon Arbor 19,05mm

## 6.2. Adjusting and configuration

### 6.2.1. Dividing disc exchange

Dividing disc (point 6.1. pos. 11) of HMCS100-1 grinding machine is responsible for accurate reshaping of annular cutters depending on the number of teeth. The basic equipment of machine consist of the following dividing disc: T - 8 for cutters with 4 or 8 teeth, T - 10 for cutters with 5 or 10 teeth, and T - 6, T - 7, T - 9, (for cutters with 6, 7, 9 teeth).



Dividing disc exchange

Choose the dividing disc suitable for the number of core drill teeth. In order to exchange the dividing disc, first turn the star wheel in CW direction until the fixing screw (a) appears in upper position. Tighten the bolt (b) with hex key 2,5. Untighten the screw with star wheel (pt 6.1. pos. 13) in CCW direction

Untight screw (a) on dividing disc (use hex key 2,5) and pull out the disc.



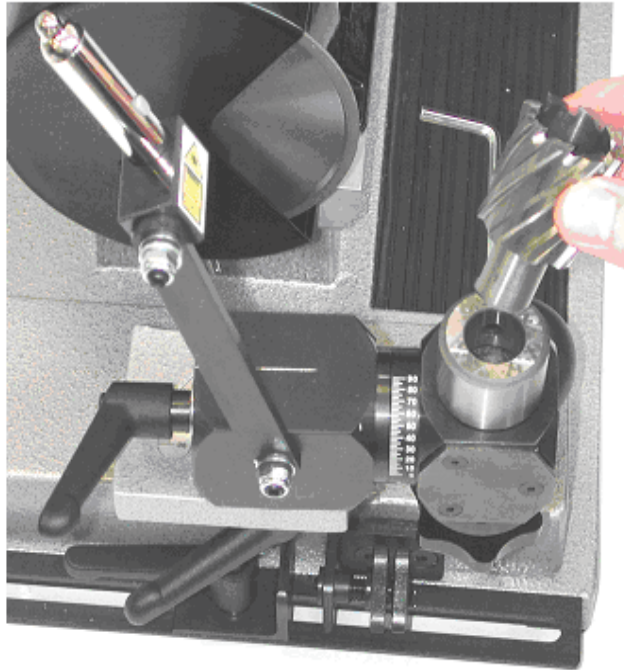
Dividing disc assembly

Place the chosen dividing disc on the spindle. It is important to draw attention, that screw (a) appears under the spindle slot (see drawing.). Screw gently the screw (a) with hex key 2,5) to arrive the slot (do not tighten). Tighten the screw with star wheel in CW direction. Next tighten screw (a) placed on dividing disc and loosen the screw (b) (upper drawing).

## 6.2.2. Annular Cutter adjusting



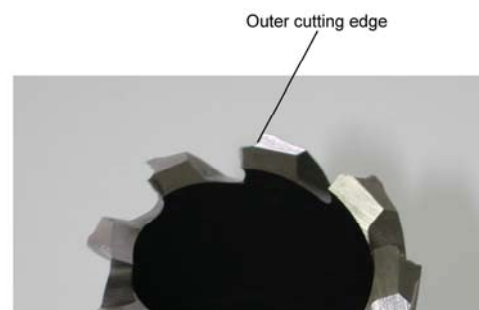
Warning! Edges of cutters are sharp.



Turn the arbor holder to 90° position (see drawing.)

When placing the cutter inside the arbor, the fixing screw must be in touch with cylindrical surface of Weldon shank ( not flat surface) of the cutter. (Do not tighten the screw). This is necessary to avoid the cutter changing position during screw tightening , resulting in incorrect set up.

The laser radius enables accurate positioning of the cutter in the arbor ( right drawing) . Wheelhead support (pt 6.1. pos. 9) has got white line (see drawing). During laser radius positioning, its light must be always located on this line. This is the method of basic laser radius positioning or its new positioning.



With the spindle of laser indicator guiding, set up laser indicator, to fit exactly the external cutting edge (see drawing).

Laser radius is switched on by small button placed on cylindrical body. Now the user should turn the core drill slightly in the arbour, in order that the laser radius lights up exactly the external cutting edge. Fix the cutter in this position tightening the screw, placed on the cylindrical surface of Weldon arbor with hex key 4.

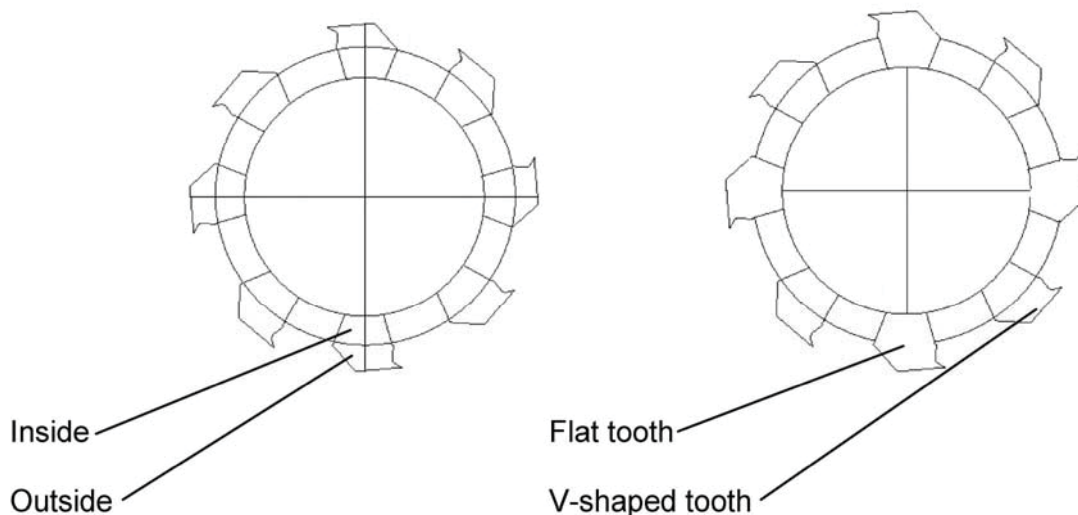
**!! MARK THE POSITIONED TEETH WITH A MARKER!**

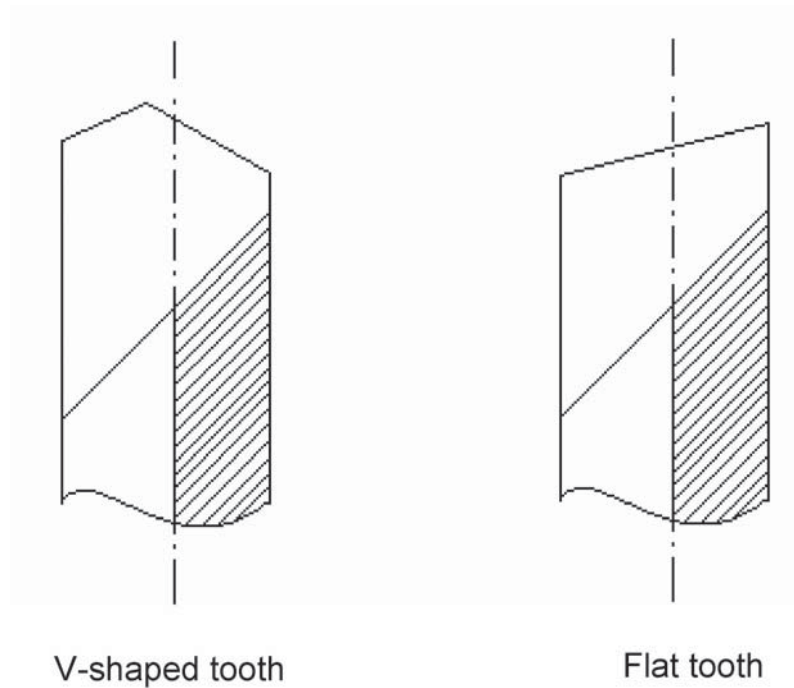
### 6.3. Regular work



Always wear glasses during resharpening works.

There are two sort of annular cutters. Cutters with flat tooth and with V-shape tooth. Standard type cutters are V shape tooth. Nonstandard cutters are equipped alternately with flat and V-shape tooth. This machine is designed to resharpen in first line tooth on internal side and next on external side. In case of nonstandard cutter resharpening first resharpen V-shape teeth then flat tooth.





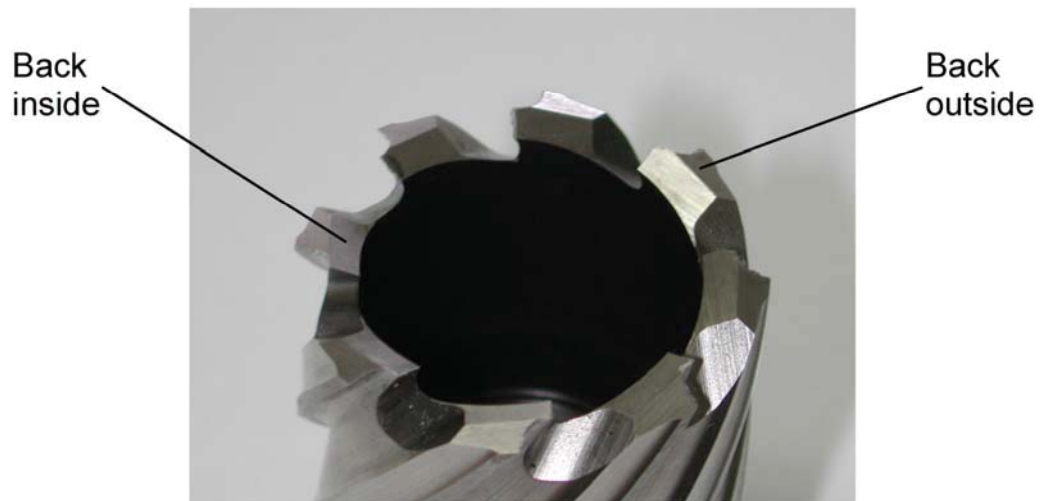
### 6.3.1. Cutter resharpening

If annular cutter manufacturer provides user with information regarding resharpening parameters of tool, it is recommended to apply this settings. Still the data attached below should be kept. As a guide variations from here can be made to suit various brands and types.

Tooth no	HSS Steel				TCT			
	Support Scale		Arbor angle		Support Scale		Arbor angle	
Surface	Intern.	Extern.	Intern.	Extern.	Intern.	Extern.	Intern.	Extern.
4	20°	7,5°	7,5°	15°	20°	7,5°	7,5°	17,5°
5	20°	7,5°	7,5°	15°				
6	20°	7,5°	7,5°	15°				
7	20°	7,5°	7,5°	15°				
8	20°	7,5°	7,5°	15°				
9	20°	7,5°	7,5°	15°				
10	20°	7,5°	7,5°	15°				
11	20°	7,5°	7,5°	15°				
12	20°	7,5°	7,5°	15°				



Cutter setting for internal surface resharpening



Firstly

Set up the angle on wheelhead support at  
Set up the arbor angle

!! Remember to use the correct dividing disc !!

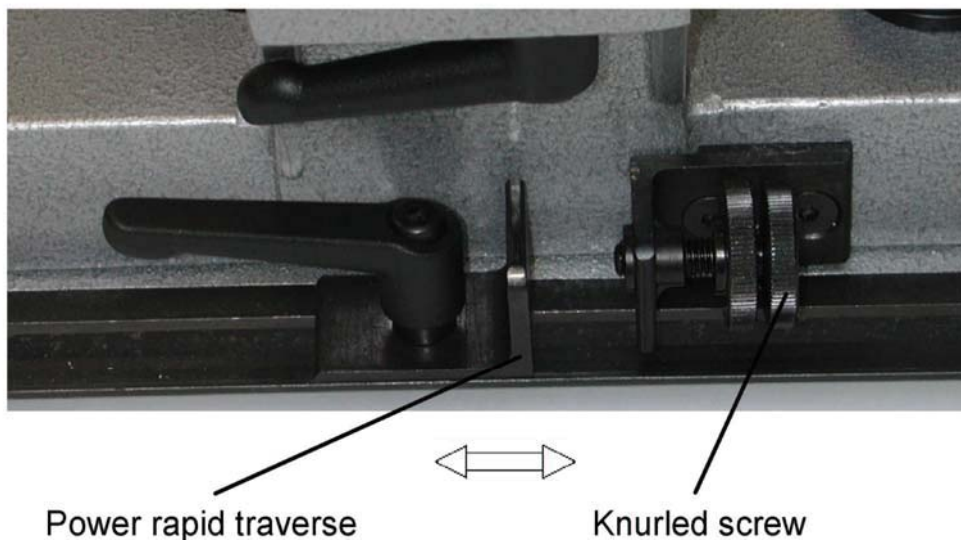
Resharpen the tooth which is directed into the middle of grinding disc. (The one which position was set up with the laser radius and marked with the marker). Adjust the motor feed mechanism to bring the face of the cutters edge you are sharpening close to the wheel. Check to see if the angles you have set are correct for the cutter. (wheel is going to grind the face evenly) Make angle adjustments of necessary.

Move the support in until the tooth contacts the grinding disc. Lock the handle of the bumper in this position (see drawing).

With micrometric screw move back the guide a little bit, so that the grinding disc just does not touch next teeth.

Start resharpening the teeth from the internal surface, moving the guide forward and backwards.

After the first tooth resharpening , move back the guide and turn the starwheel in CW direction until the dividing disc will match the next position. Do not change the motor feed setting. Take light even grinds across all teeth evenly until all teeth are sharp.



### Annular Cutter setting for external surface grinding



Set up the angle on  
**whellhead** support

Set up the angle on arbor

After angle setting, move the cutter with guide and feed motor mechanism towards the grinding disc.

**Do not resharpen the teeth marked earlier with the marker, but the next one placed lower.**

Set up the stop as you did for sharpening of the internal grinding.

Regrind all teeth evenly

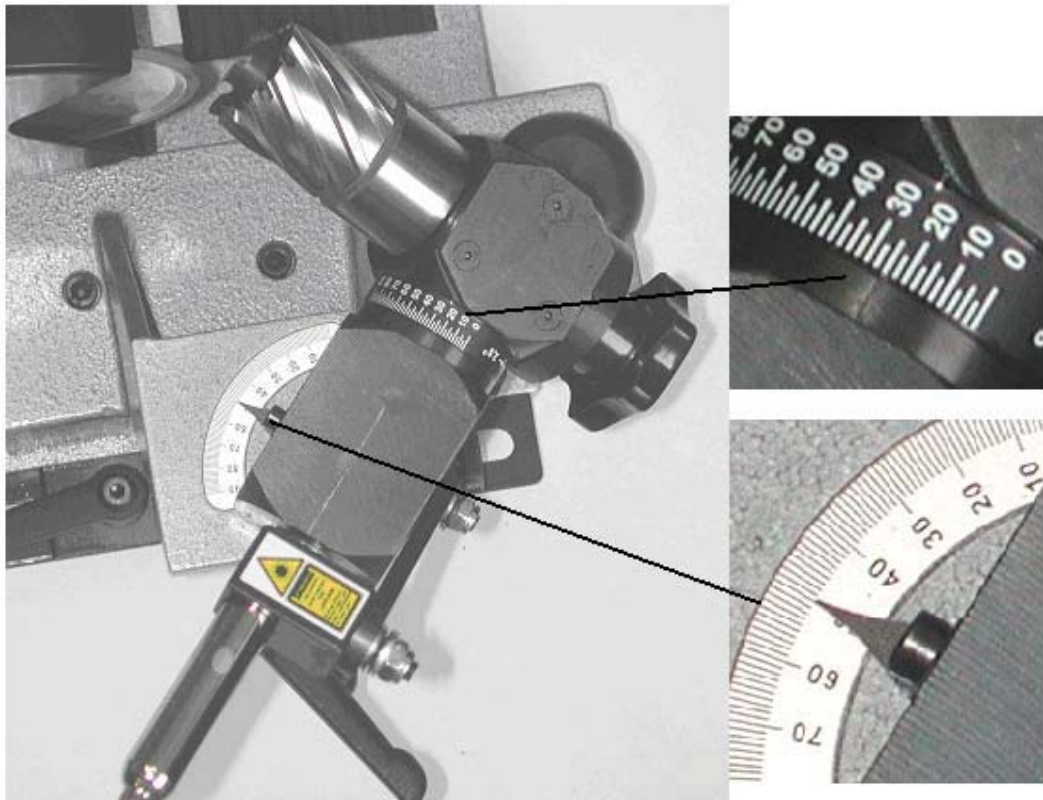


### 6.3.2. Annular Cutter gullet grinding

When heavy resharpener is needed due to badly worn or chipped teeth, gullet regrinding may be necessary.

This may be performed on the HMCS100-1 with the use of the optional gullet regrinding wheel.

As a guide to the angles for gullet regrinding, adjust angle on support to scale to 50° & angle on the arbour to 25°. Variations will need to be made from here to suit the various types and brands.



## 6.4. Grinding disc replacement

Unplug the machine from power supply before grinding disc replacement

Remove Cutter from the arbour



### Grinding disc replacement

Undo the Wingnut.( see drawing) remove the guard of grinding disc. The grinding disc is equipped with hexagonal screw placed on the flange. Loosen screw with hexagonal key 2,5 and remove the grinding disc from machine spindle.



### Grinding disc assembly

Assembly of the proper grinding disc on machine's spindle ( approx. 5mm distance from internal surface of guard) and tighten the screw. Next assemble grinding disc guard.

## 7. Maintenance

### 7.1. Cleaning and greasing

**Before cleaning, machine must be unplugged from the power supply.**

HMCS100-1 Annular Cutter grinding machine must be cleaned up from the dust minimum once a week with delicate brush. Strong contaminations must be removed with typical medium for machines cleaning. After cleaning, all movable parts must be greased with thin layer of machine oil.

To prevent machine from rust on uncovered parts use grease to cover them and cover it with soft rag.

Motors guides must be greased every 6 months with thin layer of grease on the internal surfaces.

**Warning!!**

Cleaning machine with water is not permissible. Water use may cause machine's defect or damage.